UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,174	02/06/2004	Paul Richard Granfors	141906XZ (15244US01)	7187

7590 04/16/2008

Christopher R. Carroll
McAndrews, Held & Malloy, Ltd.
Suite 3400
500 West Madison Street
Chicago, IL 60661

EXAMINER	
BITAR, NANCY	

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
04/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/774,174	GRANFORS ET AL.	
	Examiner	Art Unit	
	NANCY BITAR	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, with respect to the rejections of claims 1-22under 35 U.S.C. 102 (b) have been fully considered but are moot in view of the new ground(s) of rejection necessitated by the amendments. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Mazess et al (US 6,438,201) and Zuret al (2002/0079458).

Examiner Notes

2. Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mazess et al (US 6,438,201) in view of Zur et al (2002/0079458).

As to claim 1, Mazess et al. teaches a method for detecting scintillator hysteresis artifacts in an image from an x-ray detector, said method including: examining an image from an x-ray detector to measure a first signal level for a first area of interest and a second signal level for a second area of interest (column 20, lines 1-33, note that once the scan is complete, the signals provided by the detector 13 are reconstructed in image on the computer), wherein said first area of interest includes a first image area (bone area values of process 80) and said second area includes a second image area(bone area values of process block 82); determining a difference in said first signal level and said second signal level(column 28, lines 32-56) note that the detector 13 is sampled and digitized so as to produce a signal consisting of DAS which transmit the digital signal to the computer 18 as an image) ; and comparing said difference to a threshold to detect a shape artifact from a prior image due to scintillator hysteresis (figure 12 and 14, the threshold for the distinction between the bone and soft tissues is determined by means of a graph and note that computer 18 compares the flux index to the minimum and maximum flux threshold, column 34, lines 45-59, note that an increase in the image signal results in a shape artifact). While Mazess meets a number of the limitations of the claimed invention, as pointed out more fully above, Mazess does not specifically teach detecting the shape artifact due to scintillator hysteresis wherein said shape artifact result from an area of trapped electric charge in

a scintillator .Specifically, Zur et al l. teaches a scintillator multilayer 101 which overlies support substrate 100 that includes x-ray absorbing scintillator 110 multilayer plate for x-ray imaging uses the amorphous selenium layer in order to absorb and convert the incident x-ray energy into electric charge and employing external optical illumination to saturate trap states during electrical sensitization of X-ray sensor 60, thereby reducing ghosting effects during imaging as described in FIG. 11 A .Moreover, Zur et al teaches image wise de-trapping during subsequent imaging cycles is avoided. Instead, de-trapping occurs generally uniformly throughout photoconductive layer 124 (FIG. 3) of photoelectric conversion multilayer 334 reducing ghosting problems at the expense of an increase in the dark current thus allowing the trap state to be saturated prior to x-ray radiation exposure. It would have been obvious to one of ordinary skill in the art to detect the detect the shape artifact or the ghost effects that result from an area of trapped electrical charge in Mazess detector 13 in order to measure charge flow within the sensor and detecting the measurable charge flow to provide a high quality digital image representation of the x-ray image. Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention by applicant.

As to claim 2, Mazess et al. teaches the method of claim 1, further including exposing said x-ray detector with a flat field x-ray exposure to produce said image (figure 21, column 27, lines 27, lines 60-67).

As to claim 3, Mazess et al. teaches the method of claim 1, wherein said first image area differs from said second image area (data elements attributes to bone and data elements attribute to soft tissues, column 21, lines 12-19).

As to claim 4, Mazess et al. teaches the method of claim 1, wherein said detector includes a plurality of pixels, said plurality of pixels comprising a first set of pixels and a second set of pixels, wherein said first set of pixels are examined to measure a first set of pixel signals and said second set of pixels are examined to measure a second set of pixel signals, wherein said first signal level includes said first set of pixel image signals and said second signal level includes said second set of pixel image signals (figure 19, anterior-posterior scan of a spine showing regions of pixels measuring bone and a graph aligned with the scan having a vertical axis corresponding to vertical location in the scan and a horizontal axis corresponding to the sum of pixel values for a row of scan data permitting the identification of the vertebra by minimas or rows of low total bone value, column 26, lines 66).

As to claim 5, Mazess et al. teaches the method of claim 4, wherein said first set of pixels includes a first plurality of photodiodes, said first plurality of photodiodes measuring said first set of pixel signals and said second set of pixels includes a second plurality of photodiodes, said second plurality of photodiodes measuring said second set of pixel signals (note that the detector or detector array may use a combination scintillator, photodiode or other photo sensor, as described, or may be constructed of a material that convert x-rays directly to an electric signal as is understood in the art , column 31, lines 4-14)

As to claim 6, Mazess et al. teaches the method of claim 5, wherein said first set of pixel signals is measured by determining an amount of electrical charge discharged in said first plurality of photodiodes and said second set of pixel signals is determined by measuring an amount of electrical charge discharged in said second plurality of photodiodes (FIG. 22, the low energy detector 37(a) includes a photodiode 304 coated on its surface facing oncoming x-rays

310 with a scintillation material 308. x-rays 310 passing through the scintillation material 308 produce light which may be detected by the photodiode 304. The photodiode 304 provides an electrical signal in response to the light, which may be processed to produce an intensity signal as is understood in the art. Optionally, in between the scintillation material 308 and the diode 304 a layer of lead impregnated glass (not shown) may be placed to block radiation 310 not absorbed by the scintillation material 308 yet to pass light from the scintillator 312, column 28, lines 5-24).

As to claim 7, Mazess et al. teaches the method of claim 4, wherein said threshold is a percentage of an average of a plurality of standard deviations (figure 20) of said first set of pixel image signals and said second set of pixel image signals (column 26 lines 54-67 and column 28 lines 1-5).

As to claims 8 -10, Mazess et al. teaches the method of claim 1, further including: automatically irradiating said detector (fan beam 23) with an x-ray flux when said difference is greater than said threshold, wherein said x-ray flux is equivalent or greater to said flat field x-ray exposure (measuring x-ray flux, column 32, lines 57-67, figures 17,31,32, note that the densitometry system may adjust x-ray flux according to the flux index and body region by first adjusting x-ray current, and then, if the flux level remains unacceptable after adjusting the x-ray current to its limits, adjusting the speed of a multi-speed actuation system).

Claims 12-22 differ from claims 1-11 only in that claims 1-11 are method claims whereas, claims 12-22 are an apparatus claim. Thus, claims 12-22 are analyzed as previously discussed with respect to claims 1-11 above.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nancy Bitar whose telephone number is 571-270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Andrew W. Johns/
Primary Examiner, Art Unit 2624

Nancy Bitar 4/14/2008